

IN THE CLAIMS:

Please amend claim 1 as follows.

1. (Currently Amended) A wavelength filter, comprising:

a grating in which a first portion extending in X direction on a substrate surface and a second portion, composed of a material with a refractive index higher than that of a material of the first portion and extending in the X direction along the first portion, are alternately arranged in Y direction perpendicular to the X direction on the substrate surface at a predetermined cycle

Λ

shorter than ~~the~~ a wavelength of light to be used,

λ

wherein the wavelength filter is ~~constituted~~ configured so that ~~the~~ a cross-sectional figure of respective first portions in the Y direction and perpendicular to the substrate surface is provided with at least one protruding portion so as to become wider in the width of Y direction than that of neighboring portions within a predetermined range of distance apart from the substrate surface by a predetermined distance in Z direction to form plural waveguide layers parallel to the substrate surface and divided by regions parallel to the substrate surface in the predetermined range of distance, each of the waveguide layers reflecting light satisfying

$$\underline{\beta \equiv \frac{2\pi}{\lambda} \sin \theta + \frac{2\pi}{\Lambda}}$$

where

θ

represents an incident angle to the substrate of the light, and

β

represents a propagation factor of said each waveguide layers, and that

wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other to reflect light with a wavelength band broader than that of light reflected from a single waveguide layer.

2. (Original) The wavelength filter according to claim 1 being constituted so that the wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other by altering the predetermined range of distance.

3. (Original) The wavelength filter according to claim 1 being constituted so that the wavelength bands of light reflected from the plural waveguide layers shift while overlapping with each other by altering average refractive index of the plural waveguide layers.

4. (Previously Presented) The wavelength filter according to claim 1, wherein the material of the first portion is any of glass, plastic or silicon.

5. (Previously Presented) The wavelength filter according to claim 1, wherein the material of the second portion is any of titanium oxide, magnesium fluoride or silicon oxide.

6. (Previously Presented) The wavelength filter according to claim 1, wherein the material of the second portion is either germanium or zinc selenide.

7. (Previously Presented) A method for producing the wavelength filter according to claim 1, comprising the step of plotting the cross-sectional figure by irradiating a beam from the X direction.